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FISH & WILDLIFE
COMPENSATION
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# Pelly Lake 1993 Prescribed Burn

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The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

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Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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## BACKGROUND AND OBJECTIVES:

On May 15, 1993, a prescribed burn for wildlife habitat enhancement was conducted at Pelly Lake in the Finlay drainage area at the north end of the Williston Reservoir. The burn was conducted by the Peace/Williston Fish and Wildlife Compensation Program (a joint venture of BC Hydro & BC Environment) and BC Environment, with the approval and cooperation of the Mackenzie Forest District.

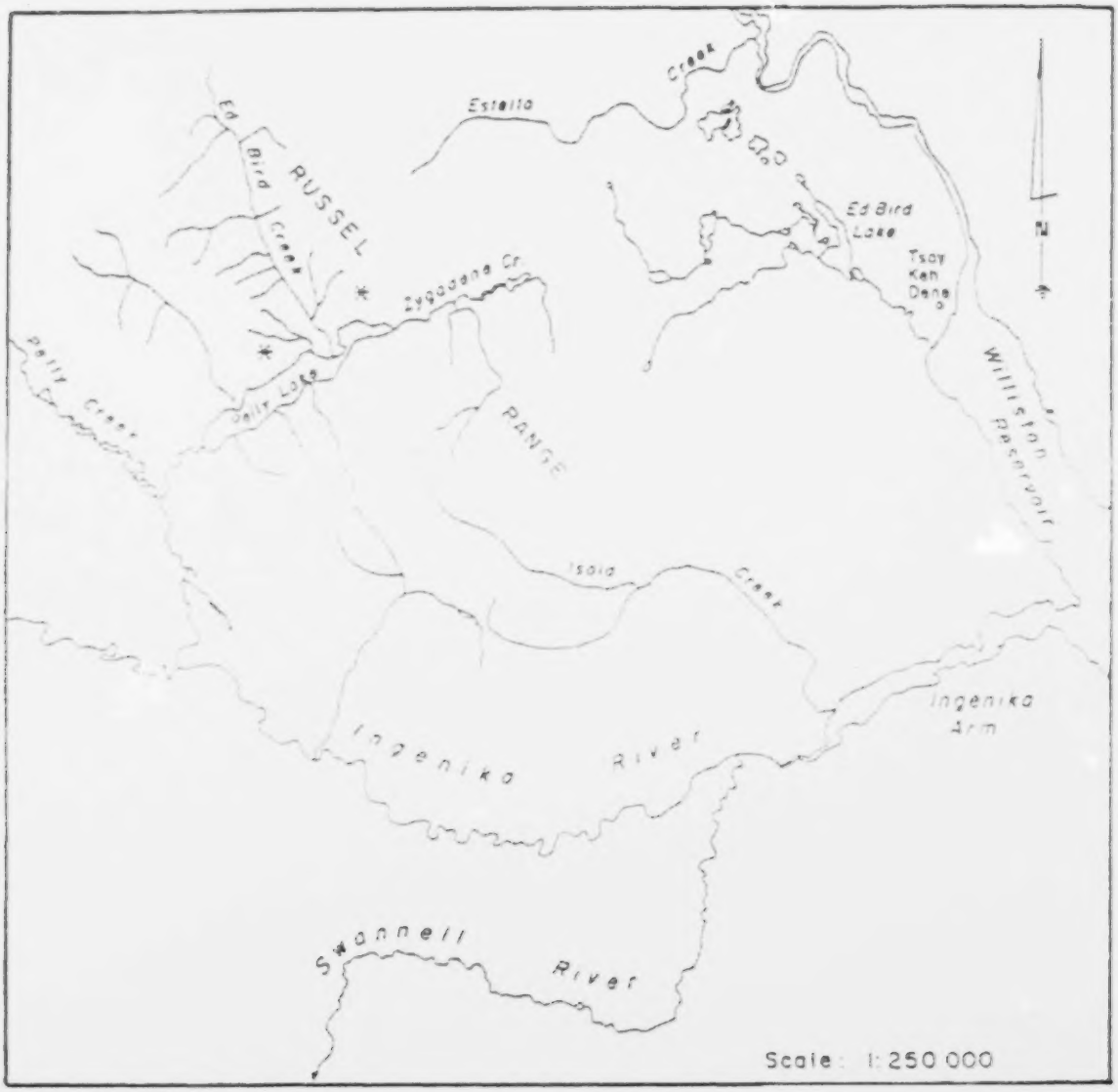
The objective of burning the south facing slopes at Pelly Lake was to set back the successional stage of vegetation, thus creating a younger area of grasses, herbs and shrubs that would benefit many wildlife species. Fire has played a natural role in ecosystems for many years, but in the last century fire suppression activities to protect valuable commercial timber resources has limited the extent of wildfires. Prescribed burns are conducted in high value wildlife areas to compensate for the suppression of wildfires, thus trying to imitate natural events and restore balance to the ecosystem. A shift in wildlife species composition is often noticed after burning; some species move out of burned areas, while others move in. Habitats dominated by grasses, herbs and shrubs are used by a number of wildlife species including many ungulates, bears, small mammals and birds. Fire can create a mosaic of habitats, thus increasing the diversity of species in an area.

In the Russel Range which surrounds the Pelly Lake area, abundant wildlife resources can be found including healthy populations of Stone's sheep and mountain goats. The Russel Mountain Range has been identified as a candidate to receive Protected Area Status in B.C. based on its abundant wildlife resources and valuable wildlife habitat. Prescribed burning of the slopes above Pelly Lake complements the objective of the Protected Area by enhancing forage production and availability for such ungulates as the Stone's sheep, moose and elk.

## AREA DESCRIPTION:

Pelly Lake lies approximately 25 kilometres west of the north end of the Williston Reservoir in northern B.C. (Figure 1). The targeted burn areas were situated on the north side of Pelly Lake within the Boreal White and Black Spruce (BWBSdk1) and Spruce Willow Birch (SWBmk) biogeoclimatic zones. Two sites were proposed for burning: site I8 encompassed 580 hectares on the north side of Pelly Lake, west of Ed Bird Creek, and site I9 which covered 340 hectares to the east of Ed Bird Creek (Figure 2). The burn sites were between 800 and 1300 metres in elevation, with south aspects and moderate (25-35%) slopes.

The upper slopes above Pelly Lake are frequented by Stone's sheep and some mountain goats. Moose and bears are common throughout the proposed burn areas; elk and caribou are present in smaller numbers. Site history shows a wildfire swept through the area in 1961 leaving extensive deadfall and debris on the ground. Dominant vegetation on the sites prior to the burn was young regenerated lodgepole pine and aspen, with pockets of mature spruce, pine and aspen prevalent near creek draws.




* BURN SITES

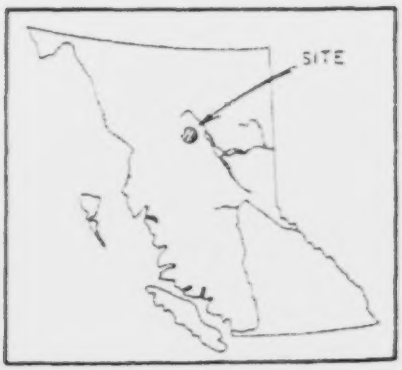



Figure 1. Pelly Lake prescribed bum sites.

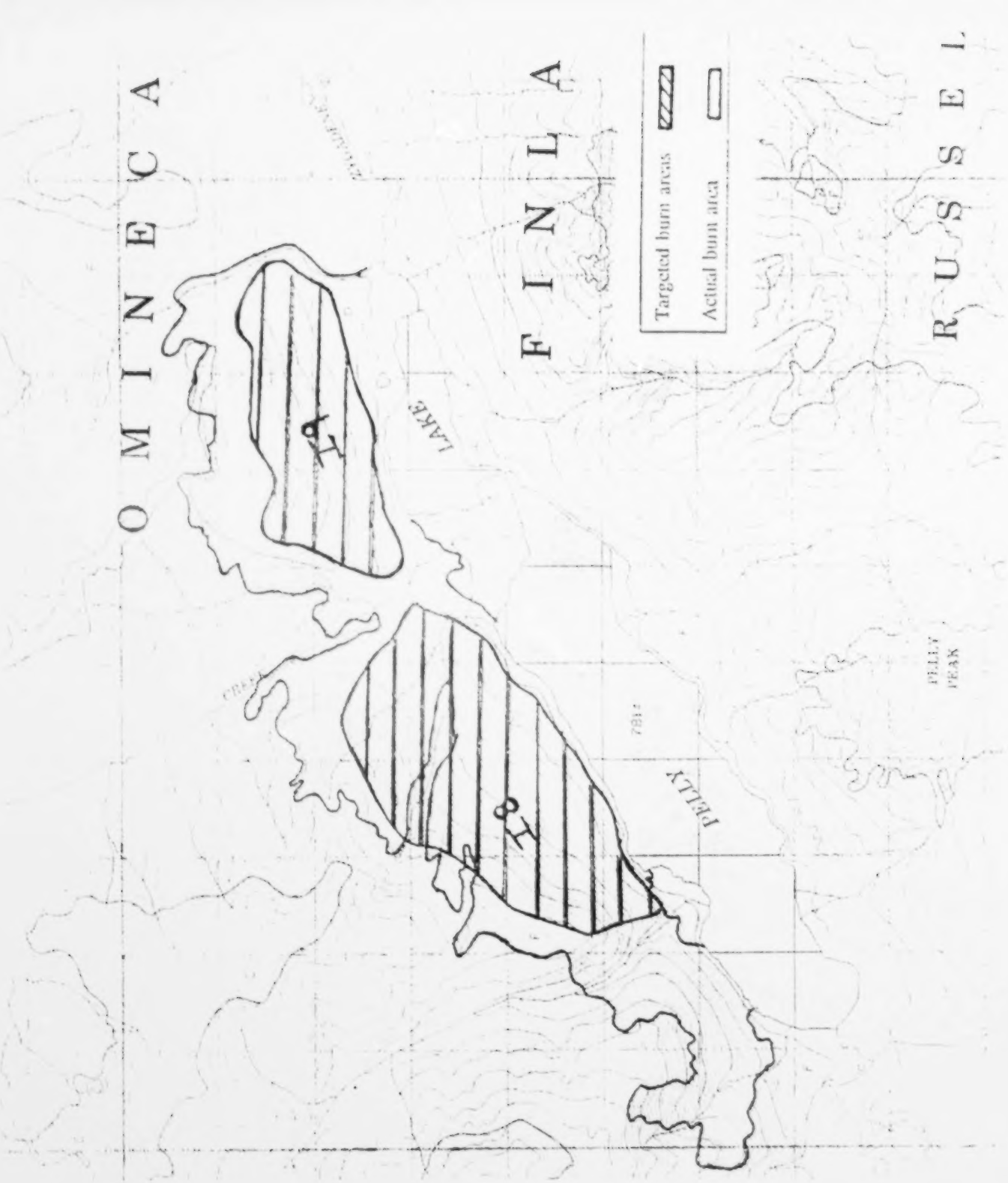



Figure 2. Proposed burn sites I8 and I9, and actual area burned.

BURN DETAILS:

Prior to ignition on May 15, 1993, areas of concern were inspected and natural fire breaks including two creeks, the lake shore and an airstrip were determined to be sufficient to control the fire. A decision to ignite only site I8 was made, and a burn permit (# 61482) was issued. Ignition of site I8 commenced at 2:30 pm at the far west end of the site, with the release of Aerial Ignition Devices (AIDs balls) from a Bell 206 helicopter. Following the release of a few AIDs balls, a mechanical problem was encountered with the AID'S machine resulting in a slight delay; ignition re-commenced at 3:30 p.m., with a total of 4,000 AIDs balls being released. The perimeter of I8 was ignited first and then four parallel passes were made across the interior of the block. At the time of ignition, the weather was clear and sunny with an estimated temperature of 20°C. Relative humidity was 35% and winds were low to moderate from the east.

By 7:00 pm on May 15, 1993, high fuel loading combined with a change of wind direction allowed the spread of the fire, making it necessary to bring in additional crews to extinguish the fire. Mop-up crews were required from May 16 to May 26, 1993. Biologists Mari Wood and Fraser Corbould (Peace/Williston Compensation Program), and biologist Chris Ritchie (B.C. Environment) assisted the Tsay Keh Dene mop-up crews until May 17, at which time Wood left the burn site. Corbould and Ritchie continued working with the mop-up crew until May 19, 1993. Two B.C. Forest Service unit crews assisted Tsay Keh crews with mop-up from May 18 to May 25, 1993.

On May 27, 1993, the Tsay Keh Dene crew was released from mop-up responsibilities by the Forest Service. Biologist Glen Watts (BC Environment) also left the burn area at this time, and the B.C. Forest Service placed a forest officer at Pelly Lake to supervise and infrared scan the fire perimeter. The total cost of the burn to the Peace/Williston Compensation Program was $76,471 (Table 1).

Table 1. Pelly burn cost breakdown.

| Pre-burn Assess | Helicopter | AIDS balls | Mop-up Crew | Staff Wages | Travel & Accom | Post-burn Monitor | Other | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 2,786 | 6,471 | 550 | 49,641 | 13,629 | 2,479 | 689 | 226 | $76,471 |

The total area burned was approximately 1240 hectares: 920 hectares of target area, plus an additional 320 hectares around the edges (Figure 2). The intense fire moved quickly through the areas, achieving about 90% burn coverage. Much of the deadfall was consumed, and most of the trees were killed. New coarse woody debris was created by fallen trees, while a number of standing snags were also created in the process. The fire also consumed some mature spruce and pine outside of the targeted burn areas. Similar to natural fires, where some habitat is often maintained, some slightly wetter areas of gentler relief did not burn. It is expected that the area will rejuvenate itself to a grass and shrub community, leading to long term gains in numbers and diversity of wildlife in the area.

## FUTURE MONITORING:

The Peace/Williston Compensation Program attempts to conduct prescribed burns on an annual basis, alternating between the Mackenzie and Dawson Creek Forest Districts. The response of vegetation to these prescribed fires will be monitored at one site within the Dawson Creek Forest District, and two sites in the Mackenzie Forest District (one in the north and one in the south). The Pelly Lake burn (for the northern part of the Mackenzie Forest District) has been selected for long-term vegetation monitoring starting in August 1993. Monitoring procedures will follow the handbook "Procedures for Environmental Monitoring in Range and Wildlife Habitat Management" (Habitat Monitoring Committee, 1990). Vegetation monitoring plots were established on the lower, middle and upper slopes of site I8 in the summer of 1993, and were re-visited in the summer of 1994.

Fires in coniferous areas usually result in the complete removal of conifers, with high grass production and low to moderate shrub production. As a result, these burns tend to benefit grazers such as sheep and elk (Backmeyer 1992). Grass production will greatly benefit the Stone's sheep, mountain goat and elk populations in the Pelly area, while the aspen, willows and shrubs will provide browse for moose and deer. Vegetation plots monitored over time will reveal changes in these various vegetation components and layers.

## LITERATURE CITED:

Backmeyer, R.J., D. Culling and B. Culling. 1992. Peace Sub-region prescribed burning program evaluation. Unpublished report. Prepared for B.C. Environment, Fort St. John, BC. 88pp.

Habitat Monitoring Committee. 1990. Procedures for environmental monitoring in range and wildlife habitat management. Draft edition version 4.1. B.C. Ministry of Environment, Lands and Parks, and B.C. Ministry of Forests, Victoria B.C. 196 pp.